

What We Claim is:

1. A method for determining the connectivity of nodes in a communication network comprising a plurality of interconnected nodes, the method comprising transmitting into the network a signal from each node, the signal constituting a signature unique to that node, detecting unique signature data from every transmitter and receiver, and correlating the detected data to determine the physical connectivity of the network.

5 2. A method as claimed in Claim 1, further comprising the step of each node reporting transmission of a unique signature and detection of a unique signature to a network manager controlling the network.

10 3. A method as claimed in Claim 2, further comprising the step wherein a node that was previously receiving a valid unique signature does not report detection of an invalid signature, whereby to prevent the network manager effecting changes under fault conditions.

15 4. A method as claimed in Claim 2, further comprising the step wherein under circumstances in which a node has not detected a unique signature matching a transmitted signature, the network manager creates an off-network pointer for the said node.

20 5. A method as claimed in Claim 2, further comprising the steps of establishing a unidirectional trail in the network manager from a second node to a first node when the first node detects the unique signature of the second node; establishing a unidirectional trail in the network manager from the first node to the second node when the second node detects the unique signature of the first node; and thereby establishing a bidirectional trail between the first node and the second node.

25 6. A communication network comprising a plurality of interconnected nodes, the network provided with means for determining the connectivity of said nodes, comprising a transmitter per node for transmitting into the network a signature signal from each node, the signal constituting a signature unique to that node, a detector per node for detecting unique signature data received at each said node, and a correlator for correlating the detected unique signature data to determine the physical connectivity of the network.

7. A communication network as claimed in Claim 6, further comprising reporting means whereby each node reports transmission of a unique signature and detection of a unique signature to a network manager controlling the network.

5 8. A communication network as claimed in Claim 7, further comprising blocking means whereby a node that was previously receiving a valid unique signature does not report detection of an invalid signature, whereby to prevent the network manager effecting changes under fault conditions.

9. A communication network as claimed in Claim 2, further comprising off-network pointer creating means whereby, when a node has not detected a unique signature matching a 10 transmitted signature, the network manager creates an off-network pointer for the said node.

10. A communication network as claimed in Claim 2, further comprising trail establishing means whereby to establish a unidirectional trail in the network manager from a second node to a first node when the first node detects the unique signature of the second node; establish a unidirectional trail in the network manager from the first node to the second 15 node when the second node detects the unique signature of the first node; and thereby to establish a bidirectional trail between the first node and the second node.

11. A communication network as claimed in Claim 6, wherein the network is an optical communication network.

12. A network manager for a communication network, the communication network 20 comprising a plurality of interconnected nodes, the network manager provided with correlator means for determining the connectivity of said nodes in response to detection at each node of unique signature signals transmitted into the network from each node, said correlator means adapted to correlate the detected unique signature signals to determine the physical connectivity of the network.

25 13. A media carrying a computer program adapted to perform the method of Claim 1.

14. A media carrying a computer program adapted to perform the function of the network manager according to Claim 6.

15. A computer program adapted to perform the method of Claim 1.

16. A computer program adapted to perform the function of the network manager 30 according to Claim 6.